

Using the Remind App to Engage Families in Engineering Talk and Design (Resource Exchange)

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Amber Simpson is an Associate Professor of Mathematics Education in the Teaching, Learning and Educational Leadership Department at Binghamton University. Her research interests include (1) examining individual's identity(ies) in one or more STEM disciplines and (2) investigating family engagement in and interactions around STEM-related activities.

Utilizing the Remind App to Engage Families in Engineering Talk and Design



She wanted to be a mechanical engineer before this experience and now she knows more specifically that she wants to be involved in robotics/mechanical engineering much more than the other engineering fields. Being able to try out the other fields was incredibly beneficial.

—Parent

OVERVIEW

Recent research has documented how talking about science and engineering concepts with family and friends, particularly parents and siblings, is one of the most influential informal learning experiences on individual's identity development and pursuit of a career in STEM [1-2]. This research points to the home environment and family connections as another, and perhaps an alternative, context to support the development and growth of youth's identity in STEM than more formal (e.g., classrooms) and non-formal (e.g., museums, libraries) contexts. As such, utilizing the home environment has the potential to diminish barriers and access to STEM learning opportunities due to cost and cultural and structural inequalities, as well as promote families' everyday experiences and explorations in cultural and meaningful contexts.

Building upon this prior scholarship, the **goal** of this resource exchange is to highlight the use of the Remind app as a potential way to get family members talking about engineering and engineers in their home and community environments.

4 Local
School
Districts



Target:
Children in
Grades 2-5

120
Families
Interested

50 Families
Accepted
Remind
Invitation

2 Remind
Prompts
per Month

EXAMPLE PROMPTS

<p>OCTOBER 30, 2022</p> <p>We will focus on civil engineering this month. Check out this video - https://youtu.be/-xbtnz4wdaA - to learn more. Over the next two weeks, look for things in your community that civil engineers designed. Send me photos and/or a video or text response detailing what you noticed and talked about.</p> <p>Read </p>	 <p>As a civil engineer, you have been asked to build a birdhouse for winter birds common to New York State. Use materials in and around your home to build a prototype (or first draft). Consider what winter birds might need when living in NY. Will your birdhouse have a theme (e.g., Frozen)?</p>
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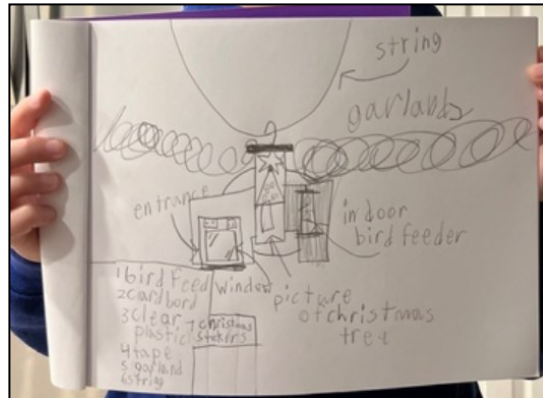
Prompt 1: Explore

Prompt 2: Create

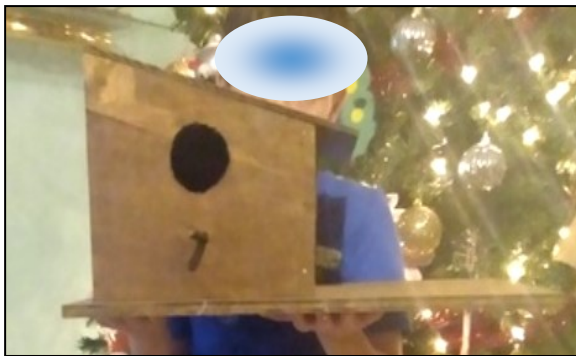
EXAMPLE RESPONSES



This is Penny's Civil Engineering project. She drew a picture of our street and labeled things that civil engineers helped plan.



Here is the beginning plans for Brady's birdhouse. He will begin collecting materials this week.



Gabby's Birdhouse



Brady's Holiday Themed Birdhouse

LESSONS LEARNED

1

During recruitment, when families express interest in the program, I recommend having a QR code for them to accept the Remind invitation in the moment and not at a later time. An alternative is including the class code to a flyer and/or social media post.

***70 interested families did not accept the Remind invitation sent via email.*

2

When sending an announcement, you are limited to 140 characters or less. I recommend uploading and sending information through attachments (e.g., figure, image).

3

We are constantly competing for family's time.

Just too busy - they were in so many activities this past year. (Parent)

I recommend integrating explore prompts that can be discussed during other family moments (e.g., driving, dinner, walking). For create prompts, reinforce the idea that the engineering task does not have to be completed in one sitting but can span multiple days.

4

As suggested by one parent, give families deadlines.

A deadline would have encouraged our family to prioritize the prompts more than we did. We do well with due dates.

5

Although participation may have been low, parents found the use of the Remind app to promote family engagement in engineering talk and design with their child(ren) an effective and positive approach.

Direct to phone/email. Easy to use. (Parent)

I recommend others utilize the Remind app as a way to engage families in engineering talk and design in their home environments. It is also a great tool for families to easily share photographs and videos.

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[1] R. Dou, Z. Hazari, K. Dabney, G. Sonnert, and P. Sadler, "Early informal STEM experiences and STEM identity: The importance of talking science," *Science Education*, vol. 103, pp. 623-637, 2019.

[2] A. Simpson and P. N. Knox, "Children's engineering identity development within an at-home engineering program during COVID-19," *Journal of Pre-College Engineering Education Research (J-PEER)*, vol. 12, Article 2, 2022.